

NASA's Vision

NASA is an investment in America's future. As explorers, pioneers, and innovators, we boldly expand frontiers in air and space to inspire and serve America and to benefit the quality of life on Earth.

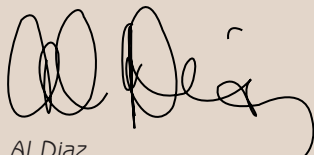
NASA 2000 Strategic Plan

Goddard Space Flight Center Programs/Projects:

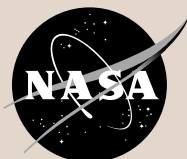
*Missions in Development and Planning**

The Goddard Space Flight Center has been entrusted by NASA and its Earth and Space Science Enterprises with providing scientific leadership, program and project management, systems and discipline engineering, spacecraft and instrument manufacture, as well as procurement, logistics and other administrative functions that are necessary to place scientific instruments into space, retrieve and distribute data, and advance knowledge of space and the Earth. Our partnerships with industry, academia, and other countries are key components of the United States' space policy and help assure the best capabilities from all available sources are brought together to attain NASA's vision.

The Program/Project summaries that follow demonstrate an extraordinary breadth and depth to the Center's near and far term program and project responsibilities. Our continued leadership role and our contributions to attaining NASA's vision depend on our ability to meet commitments for each program's metrics for mission, schedule and budget.

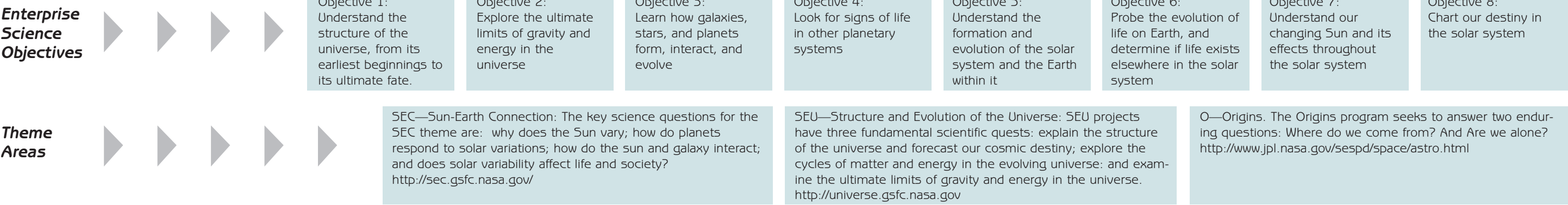













Al Diaz
Director, Goddard Space Flight Center














**Status as of September 2001*

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Science Objective	Project	Launch Date CY*	Image	Theme Area	Program	Area of Study	URL
7	HESSI/High Energy Solar Spectroscopic Imager	2001		SEC	Explorers: SMEX	Exploration of the basic physics of particle acceleration and explosive energy released in solar flares.	http://hesperia.gsfc.nasa.gov/hessi/
7	TIMED/Thermosphere-Ionosphere-Mesosphere-Energetics and Dynamics	2001		SEC	STP	Study the of influences of the sun and human-induced changes on the Earth's atmosphere 40-110 miles above the Earth's surface.	http://stp.gsfc.nasa.gov/missions/timed/timed.htm http://www.timed.jhuapl.edu/
1	MAP/Microwave Anisotropy Probe	2001		SEU	Explorers: MIDEX	Probe the conditions in the early universe by measuring the properties of the cosmic microwave background radiation over the full sky.	http://map.gsfc.nasa.gov/
1	HST-SM3B/ Hubble Space Telescope Servicing Mission 3B	2002		ASO	Great Observatories	Servicing and systems updates to the HST to continue to provide astronomical observations in the ultraviolet, visible and near-infrared wavelengths.	http://hubble.gsfc.nasa.gov http://hubble.stsci.edu
3	GALEX/Galaxy Evolution Explorer	2002		SEU	Explorers: SMEX	Map the global history and probe the causes of star formation over the redshift range 0<z<2, 80% of the life of the universe, the period over which galaxies have evolved dramatically.	http://www.srl.caltech.edu/galex/
2	INTEGRAL/International Gamma-Ray Astrophysics Laboratory	2002		SEU	International	Integral is dedicated to fine spectroscope and imaging of hard X-ray and Gamma-ray sources in the energy range 15 keV to 10 MeV.	http://astro.estec.esa.nl/
3	CHIPS/Cosmic Hot Interstellar Plasma Spectrometer	2002		SEU	Explorers: UNEX	Data that will help scientists determine the electron temperature ionization conditions, and cooling mechanisms of the million-degree plasma believed to fill the local interstellar bubble.	http://chips.ssl.berkeley.edu/chips.html
7	TWINS-A/Two Wide-angle Imaging Neutral-Atom Spectrometers	2003		SEC	Explorers: Missions of Opportunity	This spacecraft provides a new capability for stereoscopically imaging the magnetosphere (paired with TWINS-B).	http://nis-www.lanl.gov/nis-projects/twins/
Technology Development	ST-5/Space Technology 5	2003		SEC	NMP	A Nanosat Constellation Trailblazer Mission to validate revolutionary new technologies to reduce the weight, size, and cost of space missions while increasing their technical capabilities.	http://nmp.jpl.nasa.gov/ST5/
2	SWIFT/Swift Gamma Ray Burst Explorer	2003		SEU	Explorers: MIDEX	Through the use of rapid pointing of multi-wavelength telescopes and the coordination of follow-up observations, SWIFT will seek to better understand Gamma Ray Bursts and what they can reveal about the early Universe.	http://swift.sonoma.edu/
3,7	CINDI/Coupled Ion-Neutron Dynamics Investigations	2003		SEC/ SEU	Explorers: Missions of Opportunity	CINDI investigations will discover the processes that lead to and promote the growth of plasma structure across large scale gradients in plasma density.	None available
1	HST-SM4/Hubble Space Telescope Servicing Mission 4	2004		ASO	Great Observatories	Servicing and systems updates to the HST to continue to provide astronomical observations in the ultraviolet, visible and near-infrared wavelengths.	http://hubble.gsfc.nasa.gov http://hubble.stsci.edu

*Launch dates may be affected by launch vehicle availability, technical issues, and budget changes. The mission scope and launch dates of spacecraft currently in the planning phase may change before reaching the development phase. URL's were current at the time of publication.

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7	TWINS-B/Two Wide-angle Imaging Neutral-Atom	2004		SEC	Explorers: Missions of Opportunity	This spacecraft provides a new capability for stereoscopically imaging the magnetosphere (paired with TWINS-A).	http://nis-www.lanl.gov/nis-projects/twins/
4	FAME/Full-sky Astrometric Mapping Explorer	2004		ASO	Explorers: MIDEX	An astrometric satellite designed to determine with unprecedented accuracy the positions, distances, and motions of 40 million stars within our galactic neighborhood.	http://aa.usno.navy.mil/FAME/
	SMEX-8	2005			Explorers: SMEX	Future mission opportunity.	
7	STEREO - Solar TERrestrial RELations Observatory	2005		SEC	STP	To understand the fundamental nature and origin of Coronal Mass Ejections (CMEs) by creating a three dimensional (stereo) view of these CMEs.	http://stp.gsfc.nasa.gov/missions/stereo/stereo.htm
7	SOLAR-B	2005		SEC	STP and Japanese Institute of Space and Astronautical Science	Solar-B will Investigate the interaction between the Sun's magnetic field and its corona to understand the driving force behind space weather.	http://stp.gsfc.nasa.gov/missions/solar-b/solar-b.htm
1,2,3	GLAST/Gamma-ray Large Area Space Telescope	2006		SEU	GLAST	A next generation high energy gamma-ray observatory designed for making observations of celestial gamma-ray sources.	http://glast.gsfc.nasa.gov/
	SMEX-9 SMEX-10	2006 2007			Explorers: SMEX	Future mission opportunities.	
	MIDEX-5	2007		SEC	Explorers: MIDEX	Future mission opportunity.	
2	ACCESS/Advanced Cosmic Ray Composition Experiment for the Space Station	2007		SEU	International Space Station (Attached Payload)	ACCESS is a cosmic ray detector to obtain observations to help understand the origin, variety, and distribution and life span of elementary particles in our universe.	http://lhea.gsfc.nasa.gov/
7,8,3	MMS/Magnetosphere Multiscale	2008		SEC	STP	MMS will investigate the fundamental processes operating in the thin boundary layers of the magnetosphere.	http://stp.gsfc.nasa.gov/missions/mms/mms.htm or http://mms.gsfc.nasa.gov/
	SMEX-11 SMEX-12 SMEX-13	2008 2009 2010		SEU	Explorers: SMEX	Future mission opportunities.	
	MIDEX-6 MIDEX-7 MIDEX-8	2008 2009 2010			Explorers: MIDEX	Future mission opportunities.	
3,1	NGST/Next Generation Space Telescope	2008		ASO	NGST	The primary science goal of the NGST mission is to advance the understanding of the formation of the first stars and galaxies. NGST will enable programs that study the luminosities, forms, and environments of galaxies back to the epoch of their formation and investigate how the birth of a galaxy influences the chemical composition available to stars, planets, and living organisms.	http://ngst.gsfc.nasa.gov
7.8.3	GEC/Geospace Electrodynamic Connections	2009		SEC	STP	GEC is a cluster of 4 satellites combined with ground-based observations to make systematic multi-point measurements to delineate key roles the ionosphere-thermosphere plays in the Sun-Earth Connection.	http://stp.gsfc.nasa.gov/missions/gec/gec.htm
2	LISA/Laser Interferometry Space Antenna	2010		SEU	LISA	Through a set of three spacecraft operating as a giant Michelson interferometer, Lisa will provide observations on gravitational waves from galactic and extra-galactic binary systems.	http://lisa.jpl.nasa.gov/
3,1,2	CON-X/Constellation-X	2010		SEU	CON-X	CON-X will provide a team of powerful x-ray telescopes working in tandem to simultaneously observe the same distant objects.	http://constellation.gsfc.nasa.gov/

Science Objective	Project	Launch Date CY	Image	Theme Area	Program	Area of Study	URL
7,8	SDO/Solar Dynamics Observatory	2007		SEC	Living with a Star	SDO will observe the Sun's dynamics to understand the nature and source of variations from the stellar core to the turbulent solar atmosphere.	http://sec.gsfc.nasa.gov/lws-mission.htm
2	OWL/Orbiting Wide-angle Light-collectors	2011		SEU	OWL	OWL will seek to determine the origin and characterists of the highest energy cosmic rays.	http://owl.gsfc.nasa.gov/
2	MAXIM Pathfinder/MicroArcsecond X-ray Imaging Mission	2013		SEU	MAXIM	MAXIM's initial goal is to demonstrate the feasibility in space of X-ray interferometry for astronomical observations.	http://maxim.gsfc.nasa.gov/
1	SPIRIT-Space Infrared Interferometric Telescope SPECS-Submillimeter Probe of the Evolution of Cosmic Structure	After 2014		SEU	SPIRT/SPECS	SPIRIT & SPECS complement NGST to provide virtual complete spectral coverage at high angular resolution. Science goals are: How did the structure in the universe form and evolve over time? What is the cosmic history of energy release? and, What is the history of chemical element formation and dissemination?	None available
7	MC/Magnetotail Constellation	2011		SEC	STP	MC is a constellation of 50-100 nano-satellites that will acquire vector images of the Earth's magnetic and plasma flow fields to study the Earth's magnetotail and its nearby environments.	http://stp.gsfc.nasa.gov/missions/mc/mc.htm

Programs with Multiple Projects



Explorers: The mission of the Explorers Program is to provide frequent flight opportunities for focused scientific investigations from space in support of the SEC, SEU, and Origins Space Science themes. <http://explorers.gsfc.nasa.gov/>

MIDEX: Medium Class Explorers are not to exceed \$150 million (FY00 dollars).

SMEX: Small Explorers are not to exceed \$75 million (FY00 dollars).

UNEX: University Class Explorers are not to exceed \$15 million (FY00 dollars).

Missions of Opportunity: These are investigations characterized by being part of a non-NASA space mission of any size, but having a NASA cost that is typically under \$35 million (FY00 dollars) total cost to NASA.

Great Observatories: A series of four space-borne observatories designed to conduct astronomical studies over many different wavelengths. Overlapping operational phases will enable astronomers to make contemporaneous observations of an object at different spectral wavelengths. The great Observatories include: the Hubble Space Telescope (1990); the Compton Gamma-Ray Observatory (1991 deorbited 2000); the Chandra X-Ray Observatory (1999); and the Space InfraRed Telescope Facility (scheduled for 2002).

<http://coss.gsfc.nasa.gov/epo/nasm/VU/overview/greatobs/greatobs.html>

NMP: The New Millennium Program is an advanced-technology development program designed to develop and infuse a new generation of technologies and mission concepts into future missions through tests of advanced technologies in space flight.

http://nmp.jpl.nasa.gov/index_flash.html



STP: Solar Terrestrial Probes are a continuous sequence of flexible, cost-capped missions designed for the sustained study of the Sun-Earth system.

<http://stp.gsfc.nasa.gov/>





LWS: Living with a Star is a SEC program that will develop the scientific understanding necessary to effectively address those aspects of the coupled Sun-Earth System that directly affect life and society.

<http://lws.gsfc.nasa.gov/>

Agency Mission Support












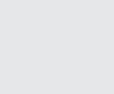
Objective	Project	Launch Date CY	Image	Program	Area of Study	URL
The Tracking and Data Relay Satellite System provides mission and data services to support multiple objectives depending on the mission.	TDRS-I/Tracking and Data Relay Satellite	2001		TDRS-H,I,J	The orbiting component of NASA's Space Network which provides primary communication with satellites in low-Earth orbit.	http://msp.gsfc.nasa.gov/tdrs/
	TDRS-J/Tracking and Data Relay Satellite	2002		TDRS-H,I,J	The orbiting component of NASA's Space Network which provides primary communication with satellites in low-Earth orbit.	http://msp.gsfc.nasa.gov/tdrs/










Suborbital and Special Orbital Programs/Projects

Objective	Project	Launch Date CY	Image	Program	Area of Study	URL
Varies according to specific mission.	Various	Approximately 25 Annually		NASA's Sounding Rocket Program	The NASA Sounding Rocket Program serves the NASA Earth Science and Space Science Enterprises and supports astrophysics, solar and heliospheric science and geoscience missions.	http://www.wff.nasa.gov/pages/soundingrockets.html
Varies according to specific mission.	Various	Approximately 25 Annually		NASA Balloon Program	The NASA Balloon Program serves the NASA Earth Science and Space Science Enterprises and supports astrophysics, solar and heliospheric science and geoscience missions. ULDB, Ultra-Long Duration Balloon technology will enable new, extended balloon-borne Earth and space science missions. The ULDB system will be capable of carrying payloads weighing 2700 Kg to altitudes of 33 Km for up to 100 days. CREAM/Cosmic Ray Energetics and Mars is the first operational mission of the new ULDB system in 2003.	http://www.wff.nasa.gov/pages/scientificballoons.html
Varies according to specific mission.	Various	Multiple Flights		Aircraft Programs	The Wallops Flight Facility Aircraft Projects Office supports Earth Science missions worldwide, including Greenland ice sheet mapping, Global Troposphere Experiment (GTE) measurements and satellite instrument validation and ground truth measurements.	http://www.wff.nasa.gov/pages/scientificaircraft.html
Varies according to specific mission.	Various	Multiple Flights		Small Shuttle Payloads Project	Small Shuttle Payloads include Hitchhiker, Get Away Specials (GAS), and Student Experiment Modules (SEM) that support microgravity, Earth science, and space science research and educational activities. The Small Shuttle Payloads Project Office has developed the Shuttle Hitchhiker Experiment Launch System (SHELS) for small satellite systems and is currently studying International Space Station attached payload concepts.	http://www.sspp.gsfc.nasa.gov

Enterprise Science Objectives

Objective 1: Discern and describe how the Earth is changing "Variability"	Objective 2: Identify and measure the primary causes of change in the Earth System "Forcing"	Objective 3: Determine how the Earth system responds to natural and human-induced changes "Response"	Objective 4: Identify the consequences of change in the Earth system for human civilization "Consequences"	Objective 5: Enable the prediction of future changes in the Earth system "Prediction"
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Science Objective	Project	Launch Date CY	Image	Program	Area of Study	URL
1,2,3	QuikTOM5/Quik-Total Ozone Mapping Spectrometer	2001		EE	The continuous observation of the global ozone past the year 2000 is critical in order to monitor the expected recovery of ozone as levels of chlorflourocarbons (CFCs) decrease from their current maximum as a result of the Montreal protocol limits.	http://quiktoms.gsfc.nasa.gov/
4,5	GOES-M/Geostationary Operational Environmental Satellite	2001		NOAA/GOES	GOES I-M satellites are the primary element of the U.S. weather monitoring and forecast operations.	http://goes2.gsfc.nasa.gov
1,3	GRACE/Gravity Recovery And Climate Experiment	2001		EE/ESSP	GRACE unravels global climatic issues by enabling a better understanding of ocean surface currents and heat transport, measuring changes in sea-floor pressure, watching the mass of the oceans change and by monitoring changes in the storage of water and snow on the continents.	http://essp.gsfc.nasa.gov/grace/index.html
1,2,3,4	AQUA (PM)	2002		EOS	Aqua will include six instruments and be placed into a polar, sun synchronous orbit. It will provide information on cloud formation, precipitation, water vapor, air temperature, and radiative properties providing insight into the detection of long-term climate changes, causes, and impacts.	http://aqua.gsfc.nasa.gov/
4,5	NOAA-M (POES-M)/Polar Operational Environmental Satellite	2002		NOAA/POES	A cooperative international program among NASA, NOAA, The United Kingdom, and France to launch polar-orbiting satellites to provide data for long-range weather forecasting.	http://poes.gsfc.nasa.gov
1	ICESat/Ice, Cloud, and Land Elevation Satellite	2002		EOS	ICESat mission will provide cloud property information and a three year data set of ice topography to provide insight into the detection of long-term climate changes, causes, and impacts.	http://icesat.gsfc.nasa.gov
2	SORCE/ Solar Radiation and Climate Experiment	2002		EOS	The SORCE consists of a small free-flying satellite carrying four instruments to measure total solar irradiance to provide insight into the detection of long-term climate changes, causes, and impacts.	http://lasp.colorado.edu/sorce/
1	Triana	TBD		EE	Triana will observe and measure Earth Climate from the LaGrange (L1) neutral gravity point to develop more accurate models of Earth's climate.	http:// triana.gsfc.nasa.gov/home/
3	VCL/Vegetation Canopy Lidar	TBD		EE/ESSP	VCL mission is the characterization of the three-dimensional structure of the Earth, including landcover characterization, climate modeling and prediction, and global reference data set of topographic spot heights and transects.	http://essp.gsfc.nasa.gov/vcl/index.html
4,5	GOES-N/Geostationary Operational Environmental Satellite	2003		NOAA/GOES	GOES satellites are the primary element of U.S. monitoring and forecast operations. GOES N-Q will aid activities ranging from severe storm warning to resource management and advances in science.	http://goes2.gsfc.nasa.gov
3	CLOUDSAT/Cloud Satellite	2004		EE/ESSP	CloudSat is a satellite experiment designed to measure the vertical structure of clouds from space. The spacecraft will produce detailed, three-dimensional images of cloud structures that will contribute to better predictions of clouds.	http://essp.gsfc.nasa.gov/cloudsat/index.html
1,2,3,4	LDCM/Landsat Data Continuity Mission	2006		EOS	The Landsat Data Continuity Mission (LDCM) is the follow-on to Landsat-7, in the Landsat mission series. LDCM will continue the 30 year historical data set for seasonal, global, highly calibrated, multi-spectral imaging of the Earth's land surface, provide continuity of the Government's Landsat data archives beyond Landsat 7, and allow continued science investigation of multi-decadal land use/land cover change measurements.	http://ldcm.nasa.gov or http://ldcm.usgs.gov

Science Objective	Project	Launch Date CY	Image	Program	Area of Study	URL
1,2,3	AURA (CHEM)	2003		EOS	The mission will measure ozone, aerosols, and several key atmospheric constituents that play an important role in atmospheric chemistry, air quality, and climate to provide insight into the detection of long-term climate changes, causes, and impacts.	http://eos-aura.gsfc.nasa.gov
2,3	ESSP3	2004		EE/ESSP	ESSP3 will fly in formation with AQUA to provide a global set of data on aerosol and cloud properties, radiative fluxes, and atmospheric state. This enables new assessments of the radiative effects of aerosol and clouds that will greatly improve our ability to predict future climate change.	http://essp.gsfc.nasa.gov/essp3/index.html
4,5	NOAA-N (POES-N)/Polar Operational Environmental Satellite	2004		NOAA/POES	A cooperative international program among NASA, NOAA, the United Kingdom, and France to launch polar orbiting satellites to provide data for long-range weather forecasting.	http://poes.gsfc.nasa.gov
4,5	GOES-O/Geostationary Operational Environmental Satellite	2005		NOAA/GOES	GOES satellites are the primary element of U.S. weather monitoring and forecast operations. GOES N-Q will aid activities ranging from severe storm warning to resource management and advances in science.	http://goes2.gsfc.nasa.gov
1,2,3,4,5	NPP - National Polar-orbiting Operational Environmental Satellite System Preparatory Project	2005		EOS	NPP provides continuity of precision global Earth Science observations of the atmosphere, land, and oceans after the EOS Terra and Aqua missions to provide insight into the detection of long-term climate changes, causes, and impacts.	http://jointmission.gsfc.nasa.gov/
1,2,5	GPM/Global Precipitation Measurement	2007		EOS	GPM is an international cooperative constellation of precipitation measuring satellites. Designed to measure the global 4-deimensional variability of rainfall, latent heating and the micro-physics of the variability, this information will be used to improve the prediction of climate change, weather, fresh water resources and severe storms.	http://gpm.gsfc.nasa.gov
1,2,3,4	GOES-P/Geostationary Operational Environmental Satellite	2008		NOAA/GOES	GOES satellites are the primary element of U.S. monitoring and forecast operations. GOES N-Q will aid activities ranging from severe storm warning to resource management and advances in science.	http://goes2.gsfc.nasa.gov
4,5	NOAA-N'/National Oceanic and Atmospheric Administration (POES-N')/Polar Operational Environmental Satellite	2008		NOAA/POES	A cooperative international program among NASA, NOAA, the United Kingdom, and France to launch polar orbiting satellites to provide data for long-range weather forecasting.	http://poes.gsfc.nasa.gov
4,5	GOES/Geostationary Operational EnvironmentalSatellites - R - S - T	2008 2012 2015		NOAA/GOES	Continuation of the GOES series for weather monitoring and forecast operations.	http://goes2.gsfc.nasa.gov

Programs with Multiple Projects



EE: Earth Explorers is the component of the Earth Science Enterprise that investigates specific, highly focuses areas of Earth science research. It is comprised of flight projects that provide pathfinder exploratory and process driven measurements, answering innovative and unique Earth science questions. The program has the flexibility to take advantage of unique opportunities offered through technical innovation by domestic or international cooperative efforts. It provides the ability to investigate processes having unique measurement requirements and which call for quick turnaround and reaction.

<http://earthexplorers.gsfc.nasa.gov>

EOS: Earth Observing System’s program objectives are to provide the long-term observations in the area of climate and terrestrial and marine ecosystems and the supporting information system necessary to develop a comprehensive understanding of how the Earth functions as a system.

<http://earth.nasa.gov/missions/programs1.html>

ESSP: Earth System Science Pathfinder missions are the cornerstones of a dynamic and versatile program consisting of multiple Earth system science space flights. The ESSP program is characterized by relatively low to moderate cost, small to medium sized missions that are capable of being built, tested, and launched in a short time interval. These missions are capable of supporting a variety of scientific objectives related to Earth science, including the atmosphere, oceans, land surface, polar ice regions and solid earth. Investigations include development and operation of remote sensing instruments and the conduct of investigations utilizing data from these instruments.

<http://essp.gsfc.nasa.gov/>

GOES: Geo-stationary Operational Environmental Satellites are the primary element of U.S. weather monitoring and forecast operations. Spacecraft and ground-based systems work together to accomplish the mission of providing weather imagery and quantitative sounding data that form a continuous and reliable stream of environmental information used for weather forecasting and related services.

<http://goes2.gsfc.nasa.gov>

POES: Polar Operational Environmental Satellites. The Polar Operational Environmental Satellite (POES) Program is a cooperative effort between NASA and the National Oceanic and Atmospheric Administration (NOAA), the United Kingdom (UK), and France to provide long-range weather forecasting. Operating as a pair, these satellites ensure that non-visible data, for any region of the Earth, are no more than six hours old.

<http://poes.gsfc.nasa.gov/>

